



MARSHALL STAR

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Nov. 20, 2008

STS-126 astronauts complete first spacewalk

By Sanda Martel

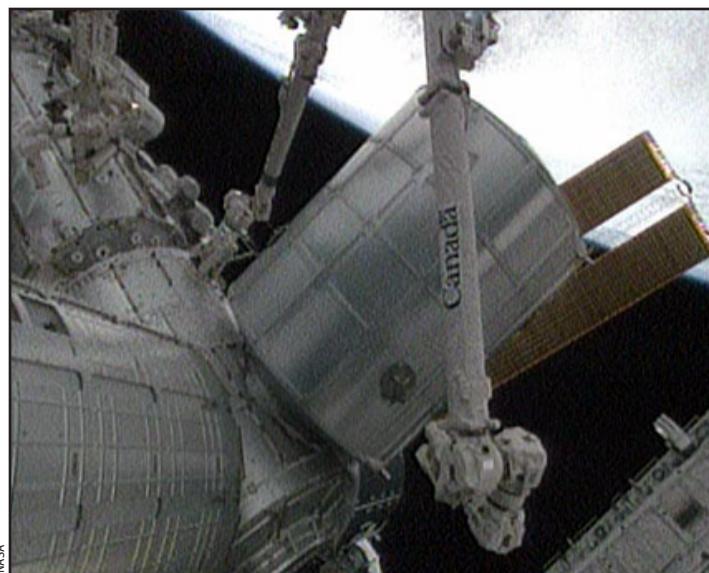
Work is under way by space shuttle Endeavour astronauts to turn a three-bedroom, one-bathroom home for three into a five-bedroom, two-bath residence for six. Astronauts completed the first spacewalk of the STS-126 mission on Nov. 18. The spacewalk lasted 6.5 hours.

Mission specialists Heide Stefanyshyn-Piper and Steve Bowen worked outside the International Space Station to replace a nitrogen tank assembly, complete assorted station assembly tasks, and to clean and lubricate the starboard solar alpha rotary joint. The rotary joint allows the solar arrays to track the sun and provide power to the space station.

Inside the station, Mission Specialist Don Pettit and Expedition 18 Flight Engineer Sandra Magnus operated the station's robotic arm. Mission Specialist Shane Kimbrough was the spacewalk coordinator.

Space shuttle Endeavour and its seven-member crew lifted off from NASA's Kennedy Space Center, Fla., at 6:55 p.m. CST Nov. 14 on a 15-day mission to repair and remodel the space station to accommodate six crew members for long-duration missions. Endeavour docked with the space station Nov. 16.

Joining Commander Chris Ferguson on the mission are Pilot Eric Boe and mission specialists Pettit, Bowen, Stefanyshyn-Piper, Kimbrough and Magnus. Magnus replaced station crew member Greg Chamitoff, who has lived on the outpost since June. She will return



The Leonardo Multi-Purpose Logistics Module containing the Water Recovery System is shown attached to the International Space Station.

to Earth on Discovery's STS-119 mission, targeted for February 2009.

On Nov. 17, the hatch was opened on the Leonardo Multi-Purpose Logistics Module, managed by the Marshall Space Flight Center. The module delivered the two Water Recovery System racks that will be added to the space station's U.S. Destiny laboratory. The racks

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NASA's new engine for Ares rocket passes review

By Craig Dunn

NASA's newest high-performance rocket engine, the J-2X, successfully completed its critical design review Nov. 13 at the Marshall Space Flight Center. The Marshall Center manages the Ares projects and is responsible for design and development of the Ares I and Ares V vehicles.

The J-2X engine, developed for NASA by Pratt and Whitney Rocketdyne of Canoga Park, Calif., is the first element of NASA's Constellation Program to pass this design milestone. The engine will power the upper stage of NASA's next-generation Ares I rocket and

the Earth departure stage of the Ares V heavy cargo launch vehicle. The Constellation Program is responsible for developing this new fleet of rockets, as well as the Orion crew capsule and the Altair lunar lander that will send explorers to the International Space Station, the moon and beyond.

"The approval by the upper stage engine critical design review board signals the beginning of manufacturing and full-scale testing of this high-performance engine," said Steve Cook, manager for the Ares Projects at the Marshall Center. "This is a testament to

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Former Marshall Associate Director Axel Roth dies at 72

"We were all in this thing together," is how Marshall Space Flight Center retiree Axel Roth once summed up working with the many friends he made during a life-long career at Marshall beginning in 1960.

Roth, who died Nov. 12, retired as associate director for the Marshall Center in 2004.

He was appointed to the position in 2001, providing executive leadership by reviewing and making decisions on overall center management policies.

Prior to graduating from Auburn University in 1959, Roth worked as a co-op student for the Army Ballistic Missile Agency in Huntsville. After graduation, he worked briefly for Lockheed in Sunnyvale, Calif., an experience that included working on the Polaris missile "for \$120 a week."

He soon returned to Huntsville and joined the Marshall Center five days after it opened July 1, 1960. Although most charter members at Marshall were identified as those who joined the center the first day it opened, Roth said he was honored when he was officially added to the list.

Roth, who worked in the craft shops on Redstone Arsenal, said he learned from the technicians and experts involved in sheet metal forming and metal bending. Those supervising technicians were like "sergeants" teaching young "second lieutenants" the ropes, he said.

As Marshall added more new employees in the early 1960s, office space on-site was limited. As a result, Roth and many other engineers worked off-site at an old, abandoned cotton mill that NASA leased as extra space. "Those were the good old days," said Roth. One of his first jobs involved doing sheer and bending moment calculations. "We used those old electromagnetic calculators and sometimes we would race each other to see who could punch those old Marchant machines the fastest," he said.

As he gained more experience, Roth's calculations were among those used for Alan Shepard's Redstone Rocket and on several forerunners to the Saturn V rocket that launched the first humans to the moon in 1969. Following the Saturn/Apollo program, Roth worked in Earth Application Resources Technology for the Skylab space station that Marshall managed in the early 1970s.

In the 1970s, Roth and other Marshall managers went to Europe to work on plans for Spacelab, a laboratory module carried in the space shuttle's cargo bay where astronauts conducted scientific

experiments. The Europeans built Spacelab for NASA and Marshall managed the program for the agency. In Europe, Roth worked closely with Jack Lee, who later served as Marshall Center director. "Understanding the culture" was a significant challenge for Marshall employees working in Europe. While Marshall employees in Europe addressed "Jack" as their supervisor by his first name, the Europeans always addressed their supervisors as "Herr" or "Mr."

As Roth's career evolved, he held other executive assignments at Marshall. At a lunch-and-learn session for employees in 2004, he smiled and said, "Sometimes, I think people must have wondered if I could even hold a job since I kept moving to different assignments."

Throughout the 1980s and 1990s, and the first half of the current decade, Roth served as Marshall's Payload Operations director for the Spacelab-2 mission, and manager of the Operations Office and Habitability Module for the Space Station Projects Office. He also served as chief engineer for Spacelab Payload Integration, deputy manager for the Space Station Project Office, deputy director for Program Development for the center, director of the center's Flight Projects Directorate and as the center's associate director.

The recipient of numerous honors and awards, Roth received the Presidential Rank Award in 2000 and the NASA Medal for Exceptional Service in 1996. In 2001, he received Auburn University's Outstanding Alumni Award from the Aerospace Engineering Department.

Born in Darmstadt, Germany, Roth was a second-generation team member of the Marshall Center. His father, Ludwig Roth, was a member of the original Wernher von Braun rocket team that moved to Huntsville in 1950. The younger Roth grew up in Huntsville and graduated from Huntsville High School.

Of course, many Marshall employees will remember Roth best as a mentor and friend. In his 2004 remarks before employees, he emphasized the importance of "creating friendships." Regarding his own extended career at Marshall, he said, "There couldn't have been a better time to come along," then smiled and told new employees, "I think the good old days are coming again."

Roth is survived by his wife, Gloria Bunch Roth.



Axel Roth

Obituaries

Charles H. Meyers, 82, of Pensacola, Fla., died Oct. 8. He retired from the Marshall Center in 1980 as an aerospace engineer.

Don Porterfield, 77, of Huntsville died Oct. 20. He retired from the Marshall Center in 1984 as an engineer.

John J. "Jack" Cooper, 85, of Huntsville died Oct. 23. He retired from the Marshall Center in 1979 as a supervisory personnel staffing specialist.

William H. Jenkins, 78, of Huntsville died Oct. 26. He retired from the Marshall Center in 1989 as an engineer. He is survived by his wife Emma Jenkins.

Ares I-X first stage hardware begins arriving at KSC

Hardware shipment for NASA's next generation rocket continued this month with a major component of the Ares I-X test vehicle leaving its manufacturing facility in Indiana and arriving in Florida for final processing before being transferred to the launch site at NASA's Kennedy Space Center.

The shipment of the rocket's first-stage hardware began with the forward skirt — a large steel cylinder that sits above the first stage booster on the rocket. The skirt helps the test rocket maintain a size and shape similar to the Ares I rocket. The Marshall Space Flight Center manages the first stage project for the Ares I-X mission, which is located at the Johnson Space Center in Houston.

"We're excited as we start to move beyond the manufacturing phase of this historic mission into the integration phase," said Steve Davis, Ares I-X deputy mission manager at Marshall. "This is where we begin to see the fruits of our labor take shape into a brand new rocket. It also means that our launch is months away rather than years."

Other Ares I-X first stage hardware scheduled to arrive in Florida later this month includes the forward skirt extension and pieces of the fifth segment simulator. The forward skirt extension houses the main parachutes used to slow the booster when it returns to Earth after launch. The fifth segment simulator is added to existing solid rocket boosters from the shuttle inventory to better match the design of the Ares I rocket's first stage.

The hardware arrived at the Astrotech facility in Central Florida where it will undergo quality and fit checks and instrumentation installation before being sent to the Solid Rocket Booster Assembly and Refurbishment Facility at Kennedy. There it will be stacked with other first-stage hardware components before delivery to the Vehicle

Assembly Building where it will be attached to the Ares I-X test rocket. Other first stage components will continue to arrive through the next few months.

"The shipment of these first pieces is a really big deal to those of us who have been working on this for so long," Ares I-X First Stage Manager Chris Calfee said. "Watching hardware moving out means we're that much closer to flight."

The test rocket's first stage provides the primary propulsion for the vehicle from liftoff to stage separation which occurs 120 seconds into the flight. It also contains the rocket's deceleration subsystem, which includes the pilot, drogue and main parachutes. The pilot parachute is deployed at an altitude of 15,000 feet and pulls out the drogue parachute. When the drogue opens, it slows down the vehicle and orients it to descend tail first. The main parachutes are deployed as the forward skirt extension separates from the forward skirt. They are used to slow the descent speed of the first stage to 48 mph, allowing a safe impact with the water.

The Ares I-X is the first test flight for the Ares I — the agency's next-generation spacecraft and crew launch vehicle system. The flight will provide NASA an early opportunity to test and prove hardware, facilities and ground operations associated with Ares I.

The Ares I-X rocket is a combination of existing and simulator hardware that will resemble the Ares I rocket in size, shape and weight. It will provide valuable data to guide the final design of the Ares I. The test flight also will bring NASA one step closer to its exploration goals of returning to the moon for more ambitious exploration of the surface, and traveling to destinations beyond. The Ares I-X launch is scheduled for 2009.



Doug Stoffer/MSFC

Scouting out future explorers

More than 200 Girl Scouts from across north-central Alabama visited the Marshall Space Flight Center and the U.S. Space & Rocket Center on Nov. 7 and 8. The girls discussed potential careers with Marshall engineers, toured Marshall's engineering facilities and participated in workshops and other activities designed to encourage the scouts to study science, technology, engineering and math — fields crucial to NASA missions. Keith Parrish, center, deputy branch chief of Marshall's Flight Systems Integration and Test Branch in the Engineering Directorate, explains the steps required to turn urine into clean water in the Urine Processor Assembly — designed and developed by Marshall Center engineers — onboard the International Space Station. The assembly is part of the Water Recovery System that reclaims potable water from wastewater collected on the space station.

Thirty-four selected for Space Flight Awareness honors

Thirty-four Marshall Center employees and contractors are being honored for their significant contributions to the space program.

The honorees toured NASA's Kennedy Space Center in Florida and viewed the launch of the STS-126 mission Nov. 14.



Robert M. Bagdikian
*Science & Mission
Systems Office*



Jeffrey D. Bland
Ares Projects



Donald L. Carter
Engineering Directorate



Ashley N. Chappell
Deltha-Critique Inc.



Julie D. Clift
Will Technology



Lana H. Cucarola
Digital Fusion Inc.



Teresa J. Danne
*Office of the Chief
Financial Officer*



Chuck R. Duckett
*Manufacturing
Technical Solutions Inc.*



John M. Dumoulin
*Office of Strategic
Analysis &
Communications*



Natalie C. Frazier
Jacobs



Ernest M. Graham
*Office of Center
Operations*



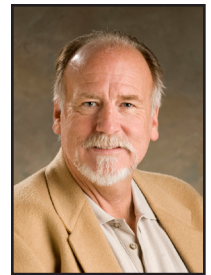
Wayne T. Harmon
Office of Procurement



Carlla G. Hooper
Engineering Directorate



Barry Howell
AI Signal Research Inc.



David F. Kincaid
Engineering Directorate



Brandon Heath Lester
*Teledyne Brown
Engineering*



David A. Long
Engineering Directorate



Angela F. Lovelady
Shuttle Propulsion Office



Brian K. Mitchell
Engineering Directorate



Lori W. Mullins
*Shuttle Propulsion
Office*

See Space Flight Awareness on page 5

**Space
Flight
Awareness**
NASA
Marshall Space Flight Center



John R. Nebrig
*Office of Center
Operations*



Pamela F. Perez
Digital Fusion Inc.



T. Eric Purlee
Jacobs



Robert H. Polsgrove
Engineering Directorate



Gary L. Ralph
*Bastion Technologies
Inc.*



Robert H. Rutherford Jr.
Office of Center Operations



Rebecca A. Selvage
*Safety & Mission
Assurance Directorate*



Michael T. Shell
Engineering Directorate



Kathy A. Shockley
*Office of the Chief
Information Officer*



Kevin C. Takada
*Science & Mission
Systems Office*



Dena Thurmond
COLSA



Donna Troutman
UNITeS-SAIC



James C. Wrape
Engineering Directorate

Not pictured: Jeffrey W. Irby of the Shuttle Propulsion Office

Ares

Continued from page 1

the team's hard work during the past three years and validates our continued development of this important element of Ares I and V rockets."

The board is comprised of engineers and project managers, including representatives from the Safety and Mission Assurance organization, who reviewed the detailed designs of the new engine. The critical design review demonstrated the maturity of the engine's design and concluded that the planned technical approach meets NASA's requirements for propulsion of the Ares I upper stage. Full-scale testing will begin in the fall of 2010.

"The design of this propulsion system confirms that Ares I is proceeding on a solid foundation -- built on years of experience by an eager team of engineers," said Teresa Vanhooser, chairperson for the J-2X critical design review board. "Our goal is to build the safest and most reliable system possible to carry our future explorers on missions of exploration."

The J-2X engine is expected to be the most efficient engine of its type ever built. The high efficiency is achieved by using advanced design turbopumps, fuel injectors and a large extension added to the nozzle -- the large, bell-shaped structure through which exhaust gases are expelled with great

force as they are burned by the engine. These enhancements deliver greater thrust, or liftoff power, while burning fuel more efficiently.

The J-2X development follows the Constellation Program's goals to seek commonality between the Ares I and Ares V systems, and use proven hardware and knowledge from 50 years of American spaceflight experience to streamline development and reduce program, technical and budget risks.

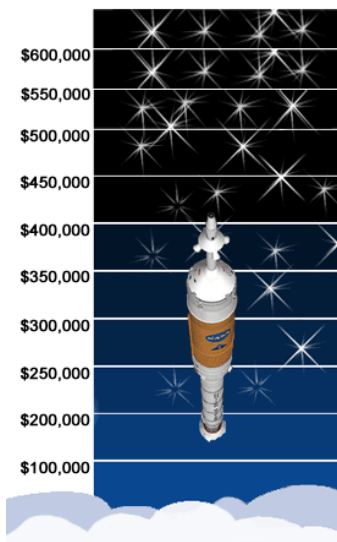
"We now are ready for the challenges ahead as we move to build and test this new engine," said Mike Kynard, manager of the Upper Stage Engine Element for the Ares Projects at the Marshall Center. "The J-2X engine design process has been a rewarding endeavor, offering a once-in-a-lifetime opportunity to develop this high-performance rocket engine that will play a vital role in America's future in space."

NASA's Johnson Space Center in Houston manages the Constellation Program, which includes the Ares I, the Ares V, the Orion and the Altair. NASA's Kennedy Space Center in Florida is responsible for program ground and launch operations. The program also includes multiple project-element teams at NASA centers and contract organizations around the United States.

Dunn, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

Give today ... change tomorrow

Marshall edges closer to \$600,000 CFC goal



To date, Marshall's civil service work force has contributed \$412,422 toward the center's \$600,000 goal. The campaign ends Dec. 12. To make a donation, visit <http://cfc.msfc.nasa.gov/>.

In celebration of NASA's 50th anniversary



Almost 50 years ago on Dec. 3, 1958, NASA and the Army reached an agreement whereby the Army Ballistic Missile Agency in Huntsville and its subordinate Development Operations Division at Redstone Arsenal could start responding to the spaceflight requirements NASA had been working on since its creation Oct. 1, 1958.

The agreement that the Army and NASA reached allowed NASA Headquarters to officially assume responsibility for the space-related work that the Army Ballistic Missile Agency had been carrying out. The transfer of the Development Operations Division to NASA on-site in Huntsville culminated in the opening of the NASA Marshall Space Flight Center on July 1, 1960.

'Focus on Marshall' highlights shell-buckling capability and Ares I ullage motor test

By Lori Meggs

Have you ever crushed an empty soda can in your bare hands? Viewers of the latest episode of the Marshall Space Flight Center's monthly video program "Focus on Marshall" will learn how Marshall engineers would crush a soda can — if it weighed 275 pounds.

"Focus on Marshall" takes a look at shell buckling testing — a capability in Marshall's Test Laboratory in which metal cylinders are put through structural strength tests. The cylinders are similar to those that will be used on the Ares launch vehicles, which will

transport the Orion spacecraft and its crew of astronauts and carry payloads to space during missions to the moon and beyond. Test engineers apply 700,000 pounds of force to the cylinders, much like crushing a soda can, to see how much pressure they can withstand.

Also in this episode, viewers will have a front-row seat to an ullage motor test for the Ares I rocket. As the rocket launches into orbit, the liquid propellant in the upper stage can't "slosh" around in its tank. The firing of the ullage motor will ensure that, between the cutoff of the first stage and the ignition of the upper stage engine, the Ares' liquid propellant stays in one place to keep the rocket balanced.

"Focus on Marshall" airs on Marshall TV on Nov. 20, Dec. 2 and Dec. 4 at 11 a.m., noon and 1 p.m. It also is available on NASA TV, Inside Marshall and on www.nasa.gov.

Meggs, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

Star to be delivered Nov. 26 during Thanksgiving week

Due to the Thanksgiving holiday, the Marshall Star will be on newsstands Nov. 26. The issue will be posted online Nov. 25 at <http://marshallstar.msfc.nasa.gov/>.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Marshall Star Ad Form."

Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue, Nov. 26, is 4:30 p.m. Thursday, Nov. 20.

Miscellaneous

Three Ken Mobley limited edition Alabama prints, one signed by the "Bear," serious inquiries. 693-4280
10-speed bike, three-shelf child's bookcase, king-size bamboo headboard, oak table, four chairs, \$25 each. 882-1067

John Deere 42-inch lawn tractor, 53 hours, headlights, cruise control, \$925 obo. 532-3957

Bathroom vanity, white, 24x18, new in box, \$100 firm. 534-2368

Sony Trinitron 32-inch TV, pickup only, \$75. 479-9908

Three file cabinets, two drawers, \$10. 881-7953

Used office furniture, conference tables, file cabinets, dry erase boards, more. 931-2740

Amish-crafted furniture, full bed, wardrobe, cabinet chest, honey oak finish, \$1,800. 653-9222

Paradigm Reference Studio Series ADP-450 surround speakers, black, left, right, center, \$525 obo. 843-513-7939

Mirage speakers, two OM-7 towers, two Omnisat satellite speakers, stands, \$1,500. 679-2165

Honeywell digital thermostats, FocusPro TH5110D1022 (1H/1C) \$30; TH5220D1029 (2H/2C), \$45. 541-4991

Bathtub padded transfer bench, with back, \$80; Tetris game for PlayStation, \$19.50. 498-2028

Gateway notebook, Intel Pentium dual core mobile processor, 1.60 GHz, 120g hard drive, \$395. 883-5168

Swimming pool leaf net cover, for 16x32 pool, \$75. 883-2653

Victorian couch, beige, green, rose pattern, antique reproduction, \$800. 536-9369

Dolls, Barbie, Disney, Lucy, others, new in boxes, list/ prices upon request. 874-6886 or leighsfinds@yahoo.com

Silver-plated holloware, trays, bowls, casseroles, candelabra, candlesticks, cut-glass bowls, crystal candlesticks, more. 883-8257

Ventless cast-iron gas logs, propane, manual, heats 1,000 square feet, \$550. 655-6348

IKEA contemporary birch-color entertainment center, sliding glass door, metal legs, \$125. 797-5282

Black DCM TF-400 speakers, \$100 pair. 797-5282

House cleaning gift certificates, prices vary, leave message. 777-8595

Australian Shepherd puppies, 8 weeks old, first shots, vet checked, \$100 each. 561-2287

Goodyear Assurance TripleTred 205/55R16 tires, four, 6~7/32" remaining after 32k miles, \$120 set. 837-1035

2003 Ford F150 crew cab factory bedliner, \$100. 880-6335

Several Jacuzzis, hot tubs. 572-1710

Wrought-iron king-size bed, hardware, \$450 obo; factory Toyota wheels/tires, four, BF Goodrich, \$600 obo. 509-5340

2001 SWF embroidery machine, single head, \$5,000;

2004 Tajima embroidery machine, 15 needle, \$12,000. 702-7826

Vehicles

2007 Mitsubishi Eclipse, four cylinder, five speed, red, black interior, Rockford Phosgate stereo, \$15,415. 776-8785

2007 4Runner Sport, 2WD, V6, leather heated seats, Sirius, 27k miles, \$21,500. 426-1822

2007 Mazda3, gray, rear spoiler, sunroof, 28k miles, \$15,000 obo. 425-3727

2006 BMW 325i, white/tan, loaded, 39k miles, \$22,900. 883-6894 or 468-6894

2005 Ford Taurus Five Hundred Limited, AWD, leather, power moon roof, 44k miles, \$14,500. 975-1667

2004 Honda CBR 85 dirt bike, extras, \$1,750. 656-4085

2004 R-Vision Motorhome, 33-foot Class-A, workhorse chassis, extended warranty, online at www.thewilletfamily.com/rv, \$56,000. 883-7021

2002 Fleetwood Expedition motor home, 300HP Cummins diesel, Allison transmission, take up payments. 431-9898

1996 Jeep Cherokee, 2WD, 230k miles, \$1,900 obo. 348-0391

1994 Ford Conversion Van, Mark III, maroon, plush, TV/VCR, low mileage, 19 MPG, \$7,000. 828-4251

1991 Honda 300 Fourtrax ATV, \$1,100. 777-3221

1988 Chevrolet 1500, runs, blue, blue interior, some problems, \$1,800. 520-7836

21-foot Shadow Tunnel Hull Boat, 225 Johnson, \$3,000. 461-9841

Wanted

GeoTrax trains, track pieces, accessories. 325-3298

Information on changing combinations on file cabinet locks/safes. 506-8153

Houses/offices to clean, available evenings/weekends, leave message. 777-8595

Electrical work to do, wiring houses, detached garage, adding/removing lights, switches, plugs. 468-8906

Lost

Money, parking lot of Building 4200, Nov. 10. 544-1640

Marshall Center supports students and studies at Alabama A&M University High School Senior/NASA Day



Doug Stoffer/MSFC

Dr. John Horack, center, manager of the Marshall Space Flight Center's Science & Mission Systems Office, tosses the opening coin at the Nov. 8 gridiron match between the Alabama A&M Bulldogs of Huntsville and the Prairie View A&M Panthers of Texas. Horack, Dan Dumbacher, second from left, director of Marshall's Engineering Directorate, and approximately 50 Marshall Center volunteers supported the Alabama A&M University High School Senior/NASA Day. The event is an annual student recruitment effort to encourage students to pursue careers in technical fields. Volunteers shared information about NASA and its career opportunities with more than 2,500 students from across the country participating in the day's activities.

STS-126

Continued from page 1

are expected to be powered up and activated Nov. 20. Wastewater processing to recycle urine into potable water is expected to begin Nov. 22, according to Gregg McDaniel, manager of the International Space Station Vehicle Office in Marshall's Science & Mission Systems Office. The module will be repacked with items to come back to Earth with shuttle Endeavour.

"STS-126 is the eighth flight for the Multi-Purpose Logistics Module project, which includes the Leonardo, Raffaello and Donatello modules," said McDaniel. "It is the fifth flight of the Leonardo module and the first Multi-Purpose Logistics Module flight that has used all 16 rack bays," he added.

The modules are provided to NASA under contract with the Italian Space Agency and managed for NASA by the Marshall Center.

"An aft end cone stowage system developed for this flight allows an additional 400 pounds of cargo to be stowed," said McDaniel. "The overall weight of the module at launch was the heaviest to date — more than 27,000 pounds."

Marshall's Multi-Purpose Logistics Module operations team is supporting the STS-126 mission from the Johnson Space Center's Mission Control Center in Houston, McDaniel said.

Space shuttle Endeavour is scheduled to land Nov. 29 at the Kennedy Center.

Martel, an AI Signal Research Inc. employee, supports the Office of Strategic Analysis & Communications.

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